

REMARKS

In the Office Action of December 27, 2007, the Examiner noted that claims 1-11, 25, 26, 28, 29 and 31-33 were pending, of which claim 3 was newly withdrawn (claims 4-11 previously had been withdrawn); claims 1, 2, 25, 26, 28, 29 and 31-33 were rejected under the first and second paragraphs of 35 U.S.C. § 112; and claims 1, 2, 25, 26, 28, 29 and 31-33 were rejected under 35 U.S.C. § 101. New claims 34-36 have been added, and thus, claims 1-11, 25, 26, 28, 29 and 31-36 are pending for consideration which is respectfully requested. The rejections are traversed below.

Rejections under 35 U.S.C. § 112, First Paragraph

In item 4 on pages 3-6, claims 1, 2, 25, 26, 28, 29 and 31-33 were rejected under the first paragraph of 35 U.S.C. § 112 as not enabled by the Specification. This rejection is respectfully traversed.

On page 5 the Office Action asserted that one of skill in the art would not know how the distance between a known gene and an unknown gene will necessarily result in the prediction of the expression site of the unknown gene. For support for such an assertion, the Office Action cited Cohen et al. (Nature Genetics, October 2000, Vol. 26, pp. 183-186) as teaching the correlation between the distance between genes and the likelihood those genes will be coexpressed. Specifically, the Office Action referred to page 184, right column, second paragraph, of Cohen et al. which states that "the distance between ORFs is not in itself a predictive of increased correlation," which allegedly provides support that the distance between genes may show a trend of coexpression but that trend does not predict whether a gene is coexpressed with the known gene. Thus, the Office Action asserted that one of skill in the art would have to perform undue experimentation to determine the gene expression site of an unknown gene. This assertion is respectfully traversed.

Applicants respectfully submit that the Examiner may have confused the term "coexpression" with the term "expression." A "coexpression" is a special case of an "expression." For example, an "expression" refers to a protein that is synthesized using information encoded in genes, whereas a "coexpression" refers to genes that code for different proteins are expressed simultaneously (Applicants respectfully direct the Examiner to paragraph 0016 of JP 2003-18995 for a definition of the term "coexpression"). Thus, Cohen et al. relates to coexpressed (e.g. simultaneously expressed) genes and discloses that the coexpression does not necessarily depend on the distance between the genes.

In contrast, embodiments disclosed in the subject application describe that when the position of a gene is known and an unknown gene is expressed near the known gene, it is predicted that a site where the unknown gene is expressed will be the site where the known gene is expressed. These embodiments of the application do not require coexpression to occur. It seems that the rejection of claims 1, 2, 25, 26, 28, 29 and 31-33 as not enabled by the Specification is based on a refusal of the Examiner to believe what is described in the application, due to confusion of "coexpression" and "expression."

In view of the above, Applicants submit that the assertions in the Office Action are not supported by Cohen et al., and therefore, Applicants respectfully request the rejection be withdrawn.

In addition, the Office Action asserted that "the ratio that defines specificity and sensitivity do[es] not appear to have a term in the equation that relates to distance[, and t]hus, one of skill in the art would not know how to determine distance from these equations" (Office Action, page 6, lines 6-9) without undue experimentation. Claim 1 has been amended to recite "the predetermined distance relation having been determined based on a sensitivity and a specificity that define an upper limit of the distance" to further clarify how the distance is determined. Accordingly, Applicants respectfully request that the rejection be withdrawn.

In item 6 on page 7, claims 1, 2, 25, 26, 28, 29 and 31-33 were rejected under 35 U.S.C. § 112 as failing to comply with the written description requirement. Specifically, the Office Action asserted that the term "supporting a user" is not supported by the Specification. Applicants have amended independent claims 1, 25, 28 and 33 to remove the term "supporting a user," and therefore, Applicants respectfully request the rejection be withdrawn.

Rejections under 35 U.S.C. § 112, Second Paragraph

In item 8 on page 8, claims 1, 2, 25, 26, 28, 29 and 31-33 were rejected under the second paragraph of 35 U.S.C. § 112 as allegedly being indefinite.

In item 8, second paragraph, the Office Action stated that claims 2, 26 and 29 recite "the distance" and it is unclear which "distance" in the claims is being referenced. This rejection is respectfully traversed.

It is not understood why the Examiner is confused, since more than one "distance" in the parent claims was identified in the rejection. Claim 1, for example, introduces "a distance" on line 4 and this is the only occurrence of "distance" as a noun. There is also "a predetermined distance relation" introduced at line 10 of claim 1, but one of ordinary skill in the art should not be

confused by this term. All occurrences of "the distance" in claims 1 and 2 refer back to the "distance" introduced on line 4 of claim 1. Similarly, claims 25 and 28 introduce "a distance" on lines 6 and 4, respectively and all occurrences of "the distance" in claims 25, 26, 28 and 29 refer back thereto. For the above reasons, withdrawal of the rejection of claims 2, 26 and 29 for the reasons set forth in item 8 of the Office Action is respectfully requested

In item 8, third paragraph, the Office Action stated that there is insufficient antecedent basis for the term "the list" as recited by claim 31. Claim 31 has been amended to recite "a list" to overcome the rejection.

In item 8, fourth paragraph, the Office Action stated that the term "second site" in claim 31 was unclear because "there are multiple second sites in the parent claim." It is not understood why this statement was made, because the words "second site" does not appear in claim 1 from which claim 31 depends. To correct the ambiguity caused by the words "the second site" in claim 31, claim 31 has been amended to recite "a second site of the selected gene expression site of at least one of the second genes ..." Withdrawal of the rejection of claim 31 for the reasons set forth in item 8 of the Office Action is respectfully requested.

In item 9 on pages 8-9, claims 1, 2, 25, 26, 28, 29 and 31-33 were rejected under the second paragraph of 35 U.S.C. § 112 as omitting essential steps.

Applicants submit the amendments to the independent claims herein further clarify the essential steps recited therein. For example, claim 1 has been amended to include "extracting the gene expression sites of the second genes from an expression profile database" to further clarify the source of the expression sites of the second genes. In addition, Applicants submit that the recitation of "the predetermined distance relation having been determined based on a sensitivity and a specificity **that define an upper limit of the distance**" (emphasis added) as recited in claim 1, for example, further clarifies how the distance is calculated.

In view of the above, Applicants respectfully request the rejection be withdrawn.

Rejections under 35 U.S.C. § 101

In item 11 on pages 10-11 claims 1, 2, 25, 26, 28, 29 and 31-33 were rejected under 35 U.S.C. § 101 as directed non-statutory subject matter for failure to recite a "useful, tangible, and concrete final result." The last line of independent claims 1 and 25 recite "outputting on a display the first gene expression site [as] determined by said determining", an example of which is illustrated in Fig. 13. Independent claim 28 ends by reciting "a display unit that displays the first gene expression site determined by said determination unit" and claim 33 ends by reciting

"outputting on a display a predicted gene expression site of the unknown gene" (claim 33, line 8). It is submitted that such outputting is tangible and that what is output is useful for the reasons discussed in the application. Therefore, it is submitted that all of the claims are directed to statutory subject matter and withdrawal of the § 101 rejection is respectfully requested.

New Claims

New claims 34-36 have been added depending from claims 1, 25 and 28, respectively. These new claims inherit the patentable recitations of their respective base claims, and therefore, patentably distinguish over the cited for at least the reasons discussed with respect to their respective parent claims in the Amendment filed on October 9, 2007.

Summary

There being no further outstanding objections or rejections, it is submitted that the application is in condition for allowance. An early action to that effect is courteously solicited.

Finally, if there are any formal matters remaining after this response, the Examiner is requested to telephone the undersigned to attend to these matters.

If there are any additional fees associated with filing of this Amendment, please charge the same to our Deposit Account No. 19-3935.

Respectfully submitted,

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